

Atlantic Oceanographic and Meteorological Laboratory (AOML)

Physical Oceanography Division

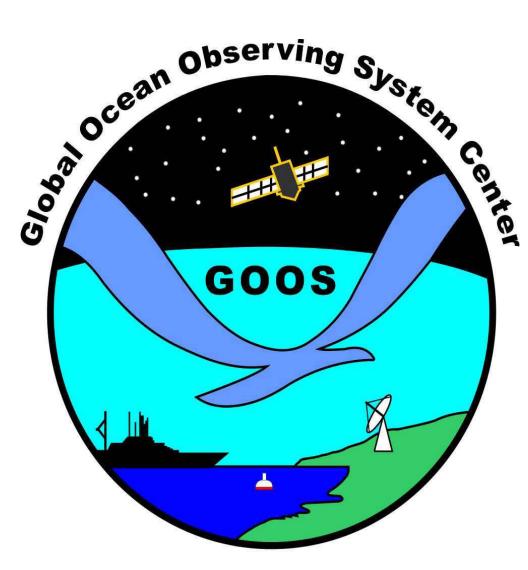
XBT OPERATIONS

Global Ocean Observing System (GOOS) Center

A.-M. Wilburn

Soneira).

deploy Argo Floats.



www.aoml.noaa.gov/goos

3. <u>Data Collection and Real-time quality control</u>

A. XBT data are collected either by an Auto-

launcher or Hand Launcher system. The real-time data

are processed, archived and formatted into a Binary

JJVV Bathy message by the SEAS PC and are trans-

mitted via Inmarsat Standard C to our AMVER/SEAS

Servers in Silver Spring, MD. Here, the data undergo a

series of automatic quality control tests (new in 2003).

Those profiles that pass are inserted onto the National

Weather Service Telecommunications Gateway and

distributed globally via the Global Telecommunications Gateway (GTS). Those that fail are usually in-

spected to identify and remedy quickly any problems

with the data collection activity (see poster of G.

usually collected four times per 24 hours on or around

the synoptic times of 0000, 0600, 1200, 1800 hours.

These data, like the XBT data, are processed, archived

and formatted into Binary BBXX Met messages and

quality meteorological systems (AutoImet) and Ther-

deploy drifting buoys and if ship riders are aboard we

mosalinograph units with SEAS on selected vessels.

C. We are currently integrating automated climate

D. Additionally, we frequently use these vessels to

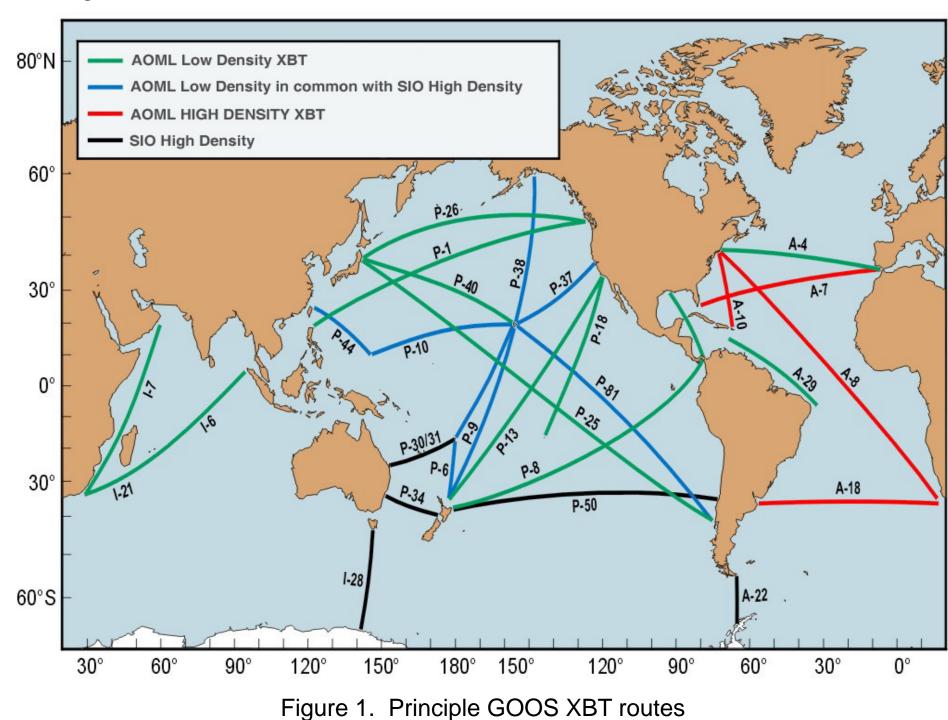
transmitted and distributed as described above.

B. Sea Surface Meteorological observations are

Steps in Collecting & Processing XBT Data

1. Recruiting Voluntary Observing Ships (VOS)

A. Utilizing maritime industry, research, Internet and NOAA contacts we locate vessels that occupy required ocean routes identified as critical by the Upper Ocean Thermal Committee. (Figure 1)



B. We approach those vessels identified either directly or by contacting the managing companies to ascertain more information about their willingness and ability to participate in the VOS Program. (Figure 2)



Figure 2. Typical VOS Vessel

- C. If company approval is obtained we then visit the vessel to discuss our requirements with the Captain and Chief Engineer. During these discussions we learn if the vessel and officers are "really" willing to become "active" participants. If so, details are worked out regarding the location and installation of the Shipboard Environmental data Acquisition System (SEAS) and schedule a time for the installation to begin.
- D. The most difficult problem regarding the recruitment of reliable and long term VOS participants is the volatility of the shipping industry whereby vessels are frequently rerouted or change their charters based on changing cargo demands. The second most difficult problem we face is the lack of VOS support in foreign countries which severely limits our capabilities of supporting XBT transects that are not serviceable in U.S. ports, such as those in the Indian Ocean.

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# 2. Training

A. If the recruited vessel will be used for High Density XBT sampling (more than six observations per day) arrangements are made to allow for scientific ship riders, loading and storing of the sampling equipment (Figure 3).



Figure 3. Equipment set-up aboard high density VOS vessel.

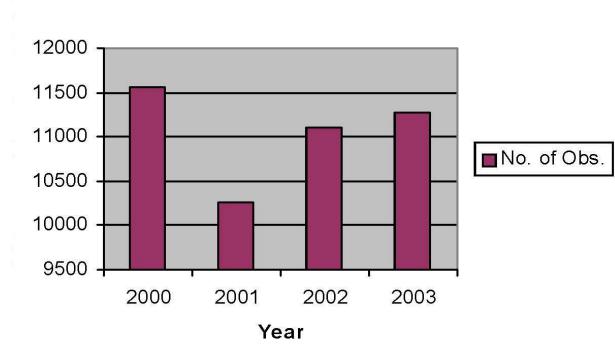
During high density runs we also load Drifters and Floats for deployment along the ship's route in areas of interest. It is important that we as "visitors" to these vessels are sensitive to the needs of the ships officers and crew and endeavor to minimally impact on them while aboard.

B. If the recruited vessel will be used for Low Density or Frequently Sampled work (four to six observations per day), then the bridge officers are trained in the use of the SEAS software and XBT hand launcher system (Figure 4).



Figure 4. XBT hand launcher system

No. of XBT Obs. 2000-2003



Histogram of XBT observations from 2000—2003

## 4. Delayed Mode Data Processing

- A. Compressed (zipped) XBT/Met data are removed from the participating VOS by GOOS Center/SEAS support personnel;
- B. These data are then FTP'd to AOML in Miami, FL where monthly data directories are set up to receive these data;
- C. The data are then unzipped to produce two (XBT and Met) binary files; D. A program called "XBT" is run on each XBT file to convert the binary files to ASCII format:
- E. These ASCII files are then assigned a name denoting the ship's call sign and the month the data were received;
- F. Each ASCII file is checked for obvious errors such as incorrect dates, times and call signs;
- G. After processing, the final XBT file is FTP'd to the National Oceanographic Data Center (NODC) in Silver Spring, MD for archiving and sent to other user groups or individuals who have requested the data.
- H. All Met files received are FTP'd to the National Climatic Data Center (NCDC) in Asheville, NC.

GOOS/NOAA/AOML

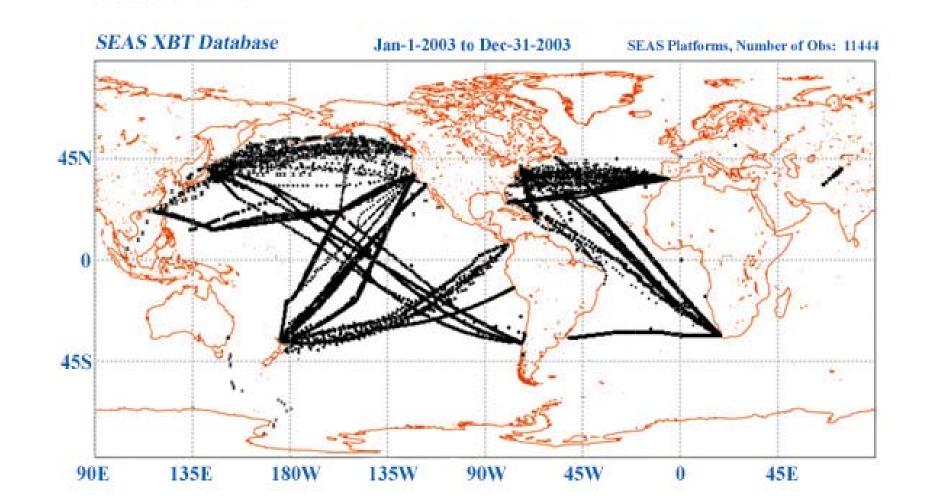


Figure 5. Plot of XBT observations collected by SEAS equipped vessels during 2003